UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
SAM NUNN ATLANTA FEDERAL CENTER
61 FORSYTH STREET, SW, SUITE 23T85
ATLANTA, GEORGIA 30303-8931

January 28, 2010

Florida Power and Light Company
ATTN: Mr. M. Nazar
Nuclear and Chief Nuclear Officer
P.O. Box 14000
Juno Beach, FL 33408-0420

SUBJECT: TURKEY POINT NUCLEAR PLANT – INTEGRATED INSPECTION REPORT 05000250/2009005 AND 05000251/2009005

Dear Mr. Nazar:

On December 30, 2009, the US Nuclear Regulatory Commission (NRC) completed an inspection at your Turkey Point Units 3 and 4. The enclosed integrated inspection report documents the inspection findings which were discussed on January 14, 2010, with Mr. M. Kiley and other members of your staff.

The inspection examined activities conducted under your license as they related to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

This report documents four NRC-identified Apparent Violation (AV) findings concerning FPL activities related to safe storage of fuel assemblies in the Unit 3 spent fuel pool. These findings were determined to involve violations of NRC requirements. These findings resulted from degrading storage racks due to dissolution of the installed Boraflex poison and your inability to implement the Boraflex remedy License Amendment No. 234 issued by NRC on July 27, 2007. Although the findings have potential safety significance greater than very low safety significance, the findings did not present an immediate safety concern because the spent fuel pool was maintained with an adequate level of soluble poison to assure subcriticality of the stored fuel. Compensatory measures are also in place to assure safety while long-term corrective measures are implemented. The NRC staff is currently reviewing these findings to determine the level of safety significance or enforcement aspect of these issues. (4OA2)

In addition, one self-revealing finding of very low safety significance (Green) was documented. This finding was determined to involve a violation of NRC requirements. However, because of the very low safety significance and because it was entered into your corrective action program, the NRC is treating this finding as a non-cited violation (NCV) consistent with Section VI.A.1 of the NRC Enforcement Policy. If you contest this NCV, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN.: Document Control Desk, Washington DC 20555-001; with copies to the Regional Administrator Region II; the Director, Office of Enforcement, United

States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at Turkey Point. In addition, if you disagree with the characterization of any finding in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region II, and the NRC Resident Inspector at Turkey Point. The information you provide will be considered in accordance with Inspection Manual Chapter 0305.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of the NRC's document system (ADAMS). Adams is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

Marvin D. Sykes, Chief
Rector Projects Branch 3
Division of Reactor Projects

Docket Nos.: 50-250, 50-251
License Nos.: DPR-31, DPR-41

Enclosure: Inspection Report 05000250/2009005 and 05000251/2009005
w/Attachment: Supplemental Information

cc w/encl. (See page 3)

States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at Turkey Point. In addition, if you disagree with the characterization of any finding in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region II, and the NRC Resident Inspector at Turkey Point. The information you provide will be considered in accordance with Inspection Manual Chapter 0305.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of the NRC's document system (ADAMS). Adams is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

Marvin D. Sykes, Chief
Rector Projects Branch 3
Division of Reactor Projects

Docket Nos.: 50-250, 50-251
License Nos.: DPR-31, DPR-41

Enclosure: Inspection Report 05000250/2009005 and 05000251/2009005
w/Attachment: Supplemental Information

cc w/encl. (See page 3)

X☐ PUBLICLY AVAILABLE ☐ NON-PUBLICLY AVAILABLE ☐ SENSITIVE X☐ NON-SENSITIVE

ADAMS: X☐ Yes ACCESSION NUMBER:_ML100280973________ X☐ SUNSI REVIEW COMPLETE MDS

OFFICE	RII:DRP	RII:DRP	RII:DRP	RII:DRP			
SIGNATURE	SON	JSS1	MCB by email	MDS			
NAME	SNinh	SStewart	MBarillas	MSykes			
DATE	01/20/2010	01/28/2010	01/28/2010	01/28/2010	1/ /2010	1/ /2010	1/ /2010
E-MAIL COPY?	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO

OFFICIAL RECORD COPY DOCUMENT NAME: I:\RPB3\TURKEY POINT\REPORTS\2009\0905 INSPECTION.DOC

cc w/encl:
Alison Brown, Nuclear Licensing
Florida Power & Light Company
Electronic Mail Distribution

McHenry Cornell, Director
Licensing and Performance Improvement
Florida Power & Light Company
Electronic Mail Distribution

Michael Kiley, Site Vice President
Turkey Point Nuclear Plant
Florida Power and Light Company
Electronic Mail Distribution

Niel Batista
Emergency Management Coordinator
Department of Emergency Management
and Homeland Security
Electronic Mail Distribution

Paul Rubin
(Acting) Plant General Manager
Turkey Point Nuclear Plant
Florida Power and Light Company
Electronic Mail Distribution

Abdy Khanpour, Vice President
Engineering Support
Florida Power and Light Company
P.O. Box 14000
Juno Beach, FL 33408-0420

Mark E. Warner
Vice President, Nuclear Operations
South Region
Florida Power & Light Company
Electronic Mail Distribution

Mitch S. Ross
Vice President and Associate General
Counsel
Florida Power & Light Company
Electronic Mail Distribution

Marjan Mashhadi
Senior Attorney
Florida Power & Light Company
Electronic Mail Distribution

William A. Passetti, Chief
Florida Bureau of Radiation Control
Department of Health
Electronic Mail Distribution

Ruben D. Almaguer, Director
Division of Emergency Preparedness
Department of Community Affairs
Electronic Mail Distribution

Mano Nazar
Executive Vice President and Chief Nuclear
Officer
Florida Power & Light Company
Electronic Mail Distribution

(Vacant)
Vice President
Nuclear Plant Support
Florida Power & Light Company
Electronic Mail Distribution

Senior Resident Inspector
Turkey Point Nuclear Generating Station
U.S. Nuclear Regulatory Commission
9760 SW 344th St.
Florida City, FL 33035

Attorney General
Department of Legal Affairs
The Capitol PL-01
Tallahassee, FL 32399-1050

Mike A. Shehadeh, P.E.
City Manager
City of Homestead
Electronic Mail Distribution

County Manager of Miami-Dade County
111 NW 1st Street, 29th Floor
Miami, FL 33128

Rajiv S. Kundalkar
Vice President - Fleet Organizational
Support
Florida Power & Light Company
Electronic Mail Distribution

Letter to Mano Nazar from Marvin D. Sykes dated January 28, 2010

SUBJECT: TURKEY POINT NUCLEAR PLANT – INTEGRATED INSPECTION REPORT 05000250/2009005 AND 05000251/2009005

Distribution w/encl:
C. Evans, RII EICS
L. Slack, RII EICS
OE Mail
RIDSNRRDIRS
PUBLIC
RidsNrrPMTurkeyPoint Resource

U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket Nos.:	50-250, 50-251
License Nos.:	DPR-31, DPR-41
Report No:	05000250/2009005, 05000251/2009005
Licensee:	Florida Power & Light Company (FP&L)
Facility:	Turkey Point Nuclear Plant, Units 3 & 4
Location:	9760 S. W. 344th Street Florida City, FL 33035
Dates:	October 1, to December 31, 2009
Inspectors:	J. Stewart, Senior Resident Inspector M. Barillas, Resident Inspector G. Kuzo, Senior Health Physicist (Sections 2OS1, 2OS2, 4OA1, (4OA5) A. Nielsen, Health Physicist (Sections 2OS1, 2PS2, 4OA1) M. Coursey, Reactor Inspector (Section 1R08) C. Fletcher, Reactor Inspector (Section 1R08)
Approved by:	M. Sykes, Chief Reactor Projects Branch 3 Division of Reactor Projects

Enclosure

SUMMARY OF FINDINGS

IR 05000250/2009-005, 05000251/2009-005; 10/1/2009 – 12/31/2009; Turkey Point Nuclear Power Plant, Units 3 and 4; Problem Identification and Resolution and Occupational Radiation Safety.

The report covered a three month period of inspection by resident inspectors and region based health physics and reactor inspectors. Four AVs and one self-revealing NCV were identified. The significance of most findings is identified by their color (Green, White, Yellow, Red) using IMC 0609, "Significance Determination Process" (SDP); the cross-cutting aspect was determined using IMC 305, Operating Reactor Assessment Program; and that findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," and Revision 4, dated December, 2006.

A. Inspector Identified & Self-Revealing Findings

Initiating Events Cornerstone

TBD The inspectors identified an apparent violation of Technical Specification 5.5.1.1 requirements regarding storage of fuel assemblies in the Unit 3 spent fuel pool when Keff limits for fuel configurations were not maintained using methods described in the Final Safety Analysis Report, potentially leading to a loss of shutdown margin should a dilution event occur in the pool. When identified to the licensee, the spent fuel pool boron concentration was administratively increased and other actions were planned to restore compliance.

This finding was considered more than minor because the design control attribute that assured fuel assemblies remain subcritical in the spent fuel pool was affected. The finding was determined to potentially have greater significance because of the lack of both criticality monitoring capability in the spent fuel pool and procedures for responding to an inadvertent criticality. The inspectors evaluated this finding against NRC IMC 0609 Phase 1 Screening Worksheet for Initiating Events, Mitigation Systems, and Barriers Cornerstones. The inspectors determined that IMC 0609, Appendix M is required to determine the level of safety significance of this finding because the existing SDP guidance is not adequate to provide reasonable estimates of the finding significance within the established SDP timeliness goal of 90 days. NRC staff is currently reviewing this finding to determine the level of safety significance or enforcement aspect of the issue. (4OA2)

TBD The inspectors identified an apparent violation of 10 CFR Part 50.73(a)(2)(B), when a condition prohibited by Technical Specifications was not reported to the NRC after testing of Boraflex panels in 2004 in the Unit 3 spent fuel pool revealed degradation greater than assumed in criticality analyses. Because the FPL program for determining degradation of cells was a sampling program, the state of other cells could not be determined. When identified to the licensee by the NRC, condition report 2009-30043 was written to evaluate and report the non-compliance with Technical Specifications to the NRC.

The finding was more that minor because it impacted the regulatory process which depends on plant activities being properly reported. The inspectors evaluated this finding against NRC IMC 0609 Phase 1 Screening Worksheet for Initiating Events, Mitigation Systems, and Barriers Cornerstones. The inspectors determined that IMC 0609, Appendix M is required to determine the level of safety significance of this finding because the existing SDP guidance is not adequate to provide reasonable estimates of the finding significance within the established SDP timeliness goal of 90 days. NRC staff is currently reviewing this finding to determine the level of safety significance or enforcement aspect of the issue. (4OA2)

TBD The inspectors identified an apparent violation of 10 CFR Part 50, Appendix B, Criterion XVI, Corrective Actions, when the FPL Nuclear Fuels Department did not implement an approved Boraflex remedy for a Unit 3 spent fuel pool storage cell that exceeded Boraflex panel loss limits (L38) nor establish a date that the cell was prohibited from use. As a result, shutdown margin for the cell could not be assured in all cases. When identified to the licensee by the NRC, condition report 2009-32948 was written to document the non-compliance and an analysis was performed to assure adequate shutdown margin for the storage location.

This finding was more than minor because the design control attribute that assured fuel assemblies remain subcritical in the spent fuel pool was affected. The inspectors evaluated this finding against NRC IMC 0609 Phase 1 Screening Worksheet for Initiating Events, Mitigation Systems, and Barriers Cornerstones. The inspectors determined that IMC 0609, Appendix M is required to determine the level of safety significance of this finding because the existing SDP guidance is not adequate to provide reasonable estimates of the finding significance within the established SDP timeliness goal of 90 days. NRC staff is currently reviewing this finding to determine the level of safety significance or enforcement aspect of the issue. (4OA2)

TBD The inspectors identified an apparent violation of 10 CFR Part 50.71(e) requirements to periodically update the final safety analysis report so that the report contains effects of changes made to the facility such that the FSAR is complete and accurate. As of December 2009, changes made to manage the Unit 3 spent fuel pool since 2001, including neutron attenuation testing methods and results, use of computer programs such as RACKLIFE, and the use of alternate means of assuring that the spent fuel remains shutdown, such as rod control cluster assembly inserts and water holes, were not described in the FSAR. When identified to the licensee by the inspectors, the licensee documented the condition in condition report 2009-34470, and informed the NRC (in letter L-2009-295, dated December 31, 2009) of plans to make appropriate updates to the FSAR descriptions by March 15, 2010.

The finding was more that minor because it impacted the regulatory process which depends on plant activities being properly documented. The inspectors evaluated this finding against NRC IMC 0609 Phase 1 Screening Worksheet for Initiating Events, Mitigation Systems, and Barriers Cornerstones. The inspectors determined that IMC 0609, Appendix M is required to determine the level of safety significance of this finding because the existing SDP guidance is not adequate to provide reasonable estimates of the finding significance within the established SDP timeliness goal of 90 days. NRC staff is currently reviewing this finding to determine the level of safety significance or enforcement aspect of the issue. (4OA2)

Cornerstone: Occupational Radiation Safety

Green: A Self-revealing Non-cited Violation of Technical Specification (TS) 6.12.2, was identified for failure to meet high radiation area (HRA) control requirements for an accessible location, i.e., Unit 4 (U4) reactor auxiliary building (RAB) roof, with radiation levels greater than 1000 millirem per hour (mrem/hr) during refueling activities. Specifically, on November 3, 2009, general area dose rates exceeding 1000 mrem/hr were identified outside of an established HRA posted barricade on the RAB roof adjacent to the outside wall of the Spent Fuel Pool (SFP) building. The HRA posted barricade, i.e., locked-HRA (LHRA) barrier, was established to delineate an area outside of which dose rates would not exceed 1000 mrem/hr. The licensee documented this issue in condition report (CR) 2009-31494.

The finding was more than minor because it affected the Program and Process (exposure control) attribute of the Occupational Radiation Safety cornerstone and the failure of the licensee to implement proper HRA controls which could have led to unanticipated worker exposures. The inspectors evaluated the finding using the Occupational Radiation Safety Significance Determination Process and determined the issue to be of very low safety significance (Green) based on High Radiation Area controls in place for the subject area. The cross-cutting element of Human Performance, Decision-Making (H.1(b)) was affected when the licensee failed to conduct adequate radiological surveys needed to demonstrate compliance with TS HRA requirements for locations potentially having dose rates exceeding 1000 mrem/hr during current Unit 4 refueling activities (2OS1).

B. Licensee Identified Violations

None.

REPORT DETAILS

Summary of Plant Status:

Unit 3 operated at full power throughout the inspection period.

Unit 4 operated at full power throughout the inspection period with the following exception: On October 24 power was reduced to 88 percent because of fluctuations of the main turbine control valves. On October 25 reactor power was reduced to 50 percent for testing of main steam safety valves, then at 0001 on October 26 the reactor was shutdown to commence refueling outage 24. Unit 4 was critical on December 2, 2009, at 1425 hours and commenced return to power operation. The reactor returned to full power on December 7, 2009, and remained at full power for the rest of the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity (Reactor-R)

1R04 Equipment Alignment

.1 Partial Equipment Walkdowns

a. Inspection Scope

The inspectors conducted three partial alignment verifications of the safety-related systems listed below. These inspections included reviews using plant lineup procedures, operating procedures, and piping and instrumentation drawings, which were compared with observed equipment configurations to verify that the critical portions of the systems were correctly aligned to support operability. The inspectors also verified that the licensee had identified and resolved equipment alignment problems that could cause initiating events or impact the capability of mitigating systems or barriers by entering them into the corrective action program.

- October 2, 2009: Train 1 auxiliary feedwater and selected portions of standby steam generator feedwater while B auxiliary feedwater pump was out of service for replacement of the spend sensor per W/O 39020876-01
- November 6, 2009: B and C intake cooling water pumps powered off independent power supplies while A intake cooling water pump was out of service under WO 39022654-02
- December 7, 2009: 4A emergency diesel generator (EDG), 3A EDG, 3B EDG using licensee procedure 0-OSP-023.3, Equipment Operability Verification with an Emergency Diesel Generator Inoperable , when 4B EDG failed to start for its surveillance run (CR 2009-34181)

b. Findings

No findings of significance were identified.

1R05 Fire Protection

a. Inspection Scope

.1 Fire Area Walkdowns

The inspectors toured the following six plant areas during this inspection period to evaluate conditions related to control of transient combustibles and ignition sources, the material condition and operational status of fire protection systems including fire barriers used to prevent fire damage or fire propagation. The inspectors reviewed these activities using provisions in the licensee's procedure 0-ADM-016, Fire Protection Plan, and 10 CFR Part 50, Appendix R. The licensee's fire impairment lists were routinely reviewed. In addition, the inspectors reviewed the condition report database to verify that fire protection problems were being identified and appropriately resolved. The following areas were inspected:

- Unit 4 H load center room
- Auxiliary building breezeway
- Cable spreading room
- Unit 4 containment
- Main control room
- Unit 3 A 4160 volt switchgear room

b. Findings

No findings of significance were identified.

1R08 Inservice Inspection (ISI) Activities (IP 71111.08P, Unit 4)

.1 Non-Destructive Examination (NDE) Activities and Welding Activities

a. Inspection Scope

From November 02- November 06, 2009, the inspectors reviewed the implementation of the licensee's In-service Inspection (ISI) program for monitoring degradation of the reactor coolant system (RCS) boundary and risk significant piping boundaries. The inspectors' activities consisted of an on-site review of NDE and welding activities to evaluate compliance with the applicable edition of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (BPVC), Section XI (Code of record: 2001 Edition with 2003 Addenda), and to verify that indications and defects (if present) were appropriately evaluated and dispositioned in accordance with the requirements of the ASME Code, Section XI acceptance standards.

The inspectors observed the following non-destructive examinations mandated by the ASME Section XI Code to evaluate compliance with the ASME Code Section XI and Section V requirements and if any indications and defects detected were detected, to determine if these were dispositioned in accordance with the ASME Code or an NRC approved alternative requirement.

- Containment Spray Re-Circ Piping- Pipe to Elbow FW-3509
- 10”-SI-2407-4 Pipe to valve 4-885
- 10”-SI-2407-5 Valve 4-885 to Elbow

The inspectors reviewed the following examination records (volumetric or surface) with recordable indications accepted for continued service to determine if acceptance was in accordance with the ASME Code Section XI or an NRC approved alternative.

None

The inspectors reviewed the following pressure boundary welds completed for risk significant systems during the last Unit 1 refueling outage to determine if the licensee applied the preservice non-destructive examinations and acceptance criteria required by the construction Code NRC approved Code Case, NRC approved Code relief request or the ASME Code Section XI. Additionally, the inspectors reviewed the welding procedure specification and supporting weld procedure qualification records to determine if the weld procedure(s) were qualified in accordance with the requirements of Construction Code and the ASME Code Section IX.

- Containment Spray Re-Circ Piping- Pipe to Elbow FW-3509
- Containment Spray Re-Circ Piping- Pipe to Elbow FW-2909

b. Findings

No findings of significance were identified.

.2 PWR Vessel Upper Head Penetration (VUHP) Inspection Activities

a. Inspection Scope

For the Unit 4 vessel head, a bare metal visual examination was required this outage pursuant to 10 CFR 50.55a(g)(6)(ii)(D).

The inspectors reviewed records of the visual examination conducted on the Unit 4 reactor vessel head to evaluate if the activities were conducted in accordance with the requirements of ASME Code Case N-729-1 and 10 CFR 50.55a(g)(6)(ii)(D). Specifically, the inspectors reviewed the following documentation and/or observed the following activities:

- Evaluated if the required visual examination scope/coverage was achieved and limitations (if applicable) were recorded in accordance with the licensee procedures
- Evaluated if the licensee’s criteria for visual examination quality and instructions for resolving interference and masking issues were adequate

b. Findings

No findings of significance were identified.

.3 Boric Acid Corrosion Control (BACC) Inspection Activities

a. Inspection Scope

The inspectors performed an independent walkdown of portions of the RHR system(s) which had received a recent licensee boric acid walkdown and determined whether the licensee's BACC visual examinations emphasized locations where boric acid leaks can cause degradation of safety significant components.

The inspectors reviewed the following licensee evaluations of reactor coolant system components with boric acid deposits to determine if degraded components were documented in the corrective action system. The inspectors also evaluated corrective actions for any degraded reactor coolant system components to determine if they met the component Construction Code, ASME Section XI Code, and/or NRC approved alternative. The evaluations were contained within the following CR's:

- TP CR 2009-30722, Dry boric acid from 72 hour walkdown
- TP CR 2009-30283, Result of Initial Leak Inspection per 0-OSP-041.26

The inspectors reviewed the following corrective actions related to evidence of boric acid leakage to determine if the corrective actions completed were consistent with the requirements of the ASME Code Section XI and 10 CFR Part 50, Appendix B, Criterion XVI.

- TP CR 2009-30722, Dry boric acid from 72 hour walkdown
- TP CR 2009-30283, Result of Initial Leak Inspection per 0-OSP-041.26

b. Findings

No findings of significance were identified.

.4 Steam Generator (SG) Tube Inspection Activities

a. Inspection Scope

The NRC inspectors observed the following activities and/or reviewed the following documentation and evaluated them against the licensee's technical specifications, commitments made to the NRC, ASME Section XI, and Nuclear Energy Institute (NEI) 97-06 (Steam Generator Program Guidelines):

- Reviewed the SG tube ET examination scope and expansion criteria.
- Reviewed the licensee's in-situ SG tube pressure testing screening criteria. In particular, assessed whether assumed NDE flaw sizing accuracy was consistent with

data from the EPRI examination technique specification sheets (ETSS) or other applicable performance demonstrations.

- Interviewed Eddy Current Testing (ET) data analysts and reviewed 3 samples of ECT data.
- Evaluated if the licensee's SG tube ET examination scope included potential areas of tube degradation identified in prior outage SG tube inspections and/or as identified in NRC generic industry operating experience applicable to the licensee's SG tubes.
- Reviewed the licensee's repair criteria and processes.
- Reviewed the licensee's secondary side SG Foreign Object Search and Removal (FOSAR) activities.
- Reviewed ET personnel qualifications.
- Evaluated if the ET equipment and techniques used by the licensee to acquire data from the SG tubes were qualified or validated to detect the known/expected types of SG tube degradation in accordance with Appendix H, Performance Demonstration for Eddy Current Examination, of EPRI Pressurized Water Reactor Steam Generator Examination Guidelines, Revision 7.
- Participated in the conference call between NRR/DCI staff and the licensee which detailed the licensee's SG tube examination activities and results.

b. Findings

No findings of significance were identified.

.5 Identification and Resolution of Problems

a. Inspection Scope

The inspectors performed a review of ISI/SG related problems entered into the licensee's corrective action program and conducted interviews with licensee staff to determine if;

- the licensee had established an appropriate threshold for identifying ISI/SG related problems;
- the licensee had performed a root cause (if applicable) and taken appropriate corrective actions; and
- the licensee had evaluated operating experience and industry generic issues related to ISI and pressure boundary integrity.

The inspectors performed these reviews to evaluate compliance with 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," requirements. The corrective action documents reviewed by the inspectors are listed in the Attachment to this report.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification Program

.1 Resident Inspector Quarterly Review

a. Inspection Scope

On December 8, 2009, the inspectors observed and assessed licensed operator continuing training requalification in the plant specific simulator. The simulated events were done using Nuclear Training Department Lesson Plan 750204301, Steam Generator Tube Rupture and Loss of Offsite Power. The inspectors observed the operator's use of procedures 3-EOP-E-0, Reactor Trip or Safety Injection, 3-EOP-E-3, Steam Generator Tube Rupture, and 3-ONOP-071.2, Steam Generator Tube Leak. The operator's actions were checked to be in accordance with licensee procedures. Event classifications were checked for proper classification and notification in accordance with licensee procedures 0-EPIP-20101, Duties of the Emergency Coordinator; and 0-EPIP-20134, Offsite Notifications and Protective Action Recommendations. The licensee simulated emergency plan notifications. The simulator board configurations were compared with actual plant control board configurations concerning recent plant modifications. The inspectors specifically evaluated the following attributes related to operating crew performance and the licensee evaluation:

- Clarity and formality of communication
- Ability to take timely action to safely control the unit
- Prioritization, interpretation, and verification of alarms
- Correct use and implementation of off-normal and emergency operating procedures; and emergency plan implementing procedures
- Control board operation and manipulation, including high-risk operator actions
- Oversight and direction provided by supervision, including ability to identify and implement appropriate technical specification actions and emergency plan classification and notification
- Crew overall performance and interactions
- Evaluator's critique and findings

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness

a. Inspection Scope

The inspectors reviewed the following two equipment problems and associated condition reports to verify that the licensee's maintenance efforts met the requirements of 10 CFR 50.65 (Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants) and station procedure NAP-415, Maintenance Rule Program Administration. The inspectors' efforts focused on maintenance rule scoping, characterization of maintenance problems and failed components, risk significance, determination of (a) (1) classification, corrective actions, and the appropriateness of established performance goals and monitoring criteria. The inspectors also interviewed responsible engineers and observed some of the corrective maintenance activities. The inspectors checked that when operator actions were credited to prevent failures, the operator was dedicated at the location needed to accomplish the action in a timely manner, and that the action was governed by applicable procedures. Furthermore, the inspectors verified that equipment problems were being identified and entered into the corrective action program. The inspectors used licensee engineering procedure EDI-ENG-025, Management and Administration of Maintenance Rule Processes, and the applicable system health reports in the reviews.

- Unit 3 H Load center transfer function failures described in condition reports 2009-9998 and 2007-29567 and the system's a(1) action plan per CR 2009-24655
- Unit 4 MOV-4-1400 Main steam isolation valve bypass valve failure described in condition reports 2009-22028 and 2009-25823 and the associated a(1) action plan

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control

a. Inspection Scope

The inspectors completed in-office reviews and control room inspections of the licensee's risk assessment of six emergent or planned maintenance activities. The inspectors verified the licensee's risk assessment and risk management activities using the requirements of 10 CFR 50.65(a)(4); the recommendations of Nuclear Management and Resource Council 93-01, Industry Guidelines for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants, Revision 3; and Procedures 0-ADM-068, Work Week Management and O-ADM-225, On Line Risk Assessment and Management. The inspectors also reviewed the effectiveness of the licensee's contingency actions to mitigate increased risk resulting from the degraded equipment. The inspectors evaluated the following risk assessments during the inspection:

- October 21, 2009, when the 4A Inverter was declared inoperable due to spurious control room alarms
- October 27, 2009, Unit 3 risk when 4C 480 volt load center was removed from service to support refueling outage 24
- November 2, 2009, Unit 3 risk when 4A 4160 volt bus was removed from service for maintenance
- November 3, 2009, unit 3 and unit 4 risk when 3A ICW pump was declared out of service due to excessive packing leakage and the intake cooling water independent power supply alignment which affected unit 4 outage risk.
- November 23, 2009, Unit 4 risk management when 4B residual heat removal pump was found to have a seal line leak (CR 2009-32462)

- December 7, 2009, Unit 4 risk when 4B emergency diesel generator failed to start during a surveillance test (CR 2009-34181)

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations

a. Inspection Scope

For the six operability evaluations described in the condition reports (CR) or as listed below, the inspectors evaluated the technical adequacy of licensee evaluations to ensure that technical specification operability was properly justified and the subject component or system remained available such that no unrecognized increase in risk occurred. The inspectors reviewed the final safety analysis report to verify that the system or component remained available to perform its intended function. In addition, when applicable, the inspectors reviewed compensatory measures implemented to verify that the plant design basis was being maintained. The inspectors also reviewed a sampling of condition reports to verify that the licensee was identifying and correcting any deficiencies associated with operability evaluations.

- CR 2009-28306: 3B emergency diesel generator coolant leak
- CR 2009-20043: Unit 3 spent fuel pool degraded Boraflex in Region II
- CR 2009-32389: Unit 3 spent fuel pool location L38 measured degradation greater than expected and remained in service (Calculation PTN-3FJF-09-207 Rev 0, Turkey Point Unit 3 Criticality Analysis for Location L38, dated 11-17-09 was reviewed by the inspectors)
- CR 2009-25076, The engineering evaluation updating Unit 3 RACKLIFE did not identify spent fuel pool cell F19 as requiring a Boraflex remedy (FPL Calculation PTN-ENG-SEFJ-09-018, Impact of Missed Boraflex Remedy for Storage Cell F19 on Unit 3 Spent Fuel Pool Criticality Analysis, Rev 0, was reviewed by the inspectors)
- CR 2009-30563: Unit 4 POV-4-2604 A MSIV failed stroke test
- CR 2009-32462, Unit 4, Operability of 4B residual heat removal pump when a 0.14 gallons per minute seal line leak was identified

b. Findings

No findings of significance were identified.

1R18 Plant Modifications

a. Inspection Scope

The inspectors reviewed the temporary system modification (TPM) and permanent plant modifications (PPM) listed below to ensure that the modifications did not adversely affect safety system availability or reliability. The inspectors reviewed plant modifications for systems that were ranked high in risk for departures from design basis and for inadvertent changes that could challenge the systems to fulfill their safety function. For the permanent modification, the inspectors reviewed the licensee's 10 CFR 50.59 screening to assure that NRC approval was not required prior to installation of the modification. The inspectors specifically checked material compatibility of added components, seismic qualification, adverse containment effects, and structural integrity. The inspectors conducted plant tours and discussed system status with engineering and operations personnel to check for the existence of modifications that had not been appropriately identified and evaluated.

- Work Order 38022220-03, Spent Fuel Cooling Pump 4P212B Independent Power Source Installation (and Removal) (4-GME-033.01) (TPM)
- PC/M 08-004, Steam Dump to Atmosphere Control Upgrade (PPM)

b. Findings

No findings of significance were identified.

1R19 Post Maintenance Testing

a. Inspection Scope

For the five post maintenance tests listed below, the inspectors reviewed the test procedures and either witnessed the testing and/or reviewed test records to determine whether the scope of testing adequately verified that the work performed was correctly completed and demonstrated that the affected equipment was functional and operable. The inspectors verified that the requirements of Procedure 0-ADM-737, Post Maintenance Testing, were incorporated into test requirements. The inspectors reviewed the following work orders (WO) and/or surveillance procedures (OSP):

- Unit 3 and 4, B auxiliary feedwater pump turbine returned to service using 4-OSP-075.2, Auxiliary Feedwater Train 2 Operability Verification, following repair of the speed sensor using work package 39020876-01, Replace magnetic pickup unit for tachometer
- B Standby steam generator feedwater pump (P82B) returned to service using following circuit modification and replacement of the oil temperature switch under Plant change/modification 03-038 (Work Order 37025757)
- 4B emergency diesel generator returned to service using 4-OSP-023.1, Section 7.2, 4B Emergency Diesel Generator Operability Test, following fuel oil filter replacement using Work Order 39008644-01, Quarterly Emergency Diesel Generator Maintenance
- Post-modification testing of CV-4-1606, Valve Exercise Test, following modification under PCM 08-004. Work Order 39007619-03, Hand Auto Station and Controller Replacement; and PCM 08-004 were reviewed by the inspectors
- 4B Residual Heat Removal System Inservice Test, 4-OSP-050.2, upon completion of work order package 36012536 for the 4B RHR pump motor changeout

b. Findings

No findings of significance were identified.

1R20 Refueling and Other Outage Activities

.1 Unit 3 Refueling Outage 24

a. Review of Outage Plan

Unit 4 entered a refueling outage on October 27, 2009. Prior to the outage, the inspectors reviewed the licensee's outage plan and risk management activities. Licensee procedure O-ADM-051, Outage Risk Assessment and Control, and various maintenance schedules were reviewed to verify that the licensee had performed adequate risk assessments and had planned risk-management strategies as required by 10 CFR 50.65(a)(4). The outage risk implementation was discussed with a senior reactor operator assigned risk management duties. The inspectors verified that the licensee adhered to administrative risk reduction methodologies and operating license requirements that maintained defense-in-depth.

b. Findings

No findings of significance were identified.

.2 Monitoring of Shutdown Activities

a. Inspection Scope

The inspectors observed portions of the plant cooldown in accordance with FPL procedure 4-GOP-305, Hot Standby to Cold Shutdown, to verify that cooldown restrictions and similar procedural requirements were followed. The inspectors verified that the cooldown was monitored in accordance with licensee procedure 4-OSP-041.7, Reactor Coolant System Heatup and Cooldown Temperature Verification. The inspectors reviewed operating logs and records and discussed plant shutdown and cooldown activities with operators to verify that operating procedures and technical specifications were appropriately implemented.

b. Findings

No findings of significance were identified.

.3 Refueling Activities

a. Inspection Scope

The inspectors observed fuel handling operations during core offload and supporting activities to verify that those operations and activities were being performed in accordance with technical specifications, regulations, and the licensee's approved procedures. Also, the inspectors observed refueling activities to verify that the location of fuel assemblies was tracked from core offload through core reload and monitored by control room personnel. Checks were made of foreign material controls in vicinity of the open reactor vessel and the spent fuel pool. The inspectors verified communications were properly established between the refueling bridge and the control room during fuel handling.

b. Findings

No findings of significance were identified.

.4 Licensee Controls of Outage Activities

a. Inspection Scope

During the outage, the inspectors observed the items or activities described below to verify that the licensee maintained defense-in-depth commensurate with the outage risk-control plan for key safety functions and applicable TS when taking equipment out of service.

- FPL procedure 4-GOP-305, Hot Standby to Cold Shutdown, Step 5.12, Place Residual Heat Removal in Service (October 27)
- FPL procedure 0-ADM-051, Outage Risk Assessment and Control, Step 5.1.1.21, provisions to ensure containment equipment hatch closure within required times
- ECO 4-09-04-007, MOV-878A HHSI sectionalizing motor operated valve affecting unit 4 outage risk and placing unit 3 in a 72 hour Technical Specification Action Statement

The inspectors also reviewed that the licensee's configuration changes were controlled in accordance with the outage risk control plan and that control-room operators were kept cognizant of the plant configuration. The inspectors specifically checked redundant electric power sources and inventory availability during the reduced inventory periods.

The inspectors checked the licensee's preparations for reduced inventory operations, including ability to close the equipment hatch within time constraints, control of reactor parameters, including reactor coolant temperature using core exit thermocouples, procedure compliance for control of reactor water level, and oversight of draining evolutions. The licensee did not drain to the mid-loop condition during the outage.

The inspectors also reviewed the licensee's responses to emergent work and unexpected conditions, to verify that resulting configuration changes were controlled in accordance with the outage risk control plan, and to verify that control-room operators were kept cognizant of the plant configuration.

b. Findings

No findings of significance were identified.

.5 Monitoring of Heatup and Startup Activities

a. Inspection Scope

The inspectors reviewed reactor restart and power escalation activities to verify that reactor parameters were within safety limits and that the startup evolutions were done in accordance with pre-approved procedures and plans. The inspectors conducted a walkdown of containment prior to reactor restart to verify that the licensee was identifying and correcting leaks, to verify operability of the containment sump, and to check that critical components were properly aligned.

b. Findings

No findings of significance were identified.

.6 Identification and Resolution of Problems

a. Inspection Scope

On a daily basis, the inspectors reviewed outage related issues to assure they had been entered into the licensee's corrective action program and resolved as appropriate. The inspectors verified that the licensee reviewed open deficiencies at the end of the outage to assure that significant issues had been addressed.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing

a. Inspection Scope

The inspectors either reviewed or witnessed the following four surveillance tests to verify that the tests met the Technical Specifications, the UFSAR, the licensee's procedural requirements and demonstrated that the systems were capable of performing their intended safety functions and their operational readiness. In addition, the inspectors evaluated the effect of the testing activities on the plant to ensure that conditions were adequately addressed by the licensee staff and that after completion of the testing activities, equipment was returned to the positions/status required for the system to perform its safety function. The tests reviewed included an inservice test (IST) and one containment isolation valve (CIV). Reactor coolant system leakage surveillances were monitored on a daily basis for each unit. The inspectors verified that surveillance issues were documented in the corrective action program.

- Unit 4: 4-OSP-300.1, Alternate Shutdown Panel 4C264 Operational Test, Section 7.12, Pressurizer PORV, PCV-4-455C, Transfer/Control Switch Test
- Unit 4, 4-OSP-206.1, Inservice Valve Testing-Cold Shutdown, section 7.5, Reactor Coolant Pump Seal Water Valves (IST)

- Unit 4, 4-OSP-051.5, Local Leak Rate Test, Penetration 15 – charging valve CK-4-312C (CIV)
- Unit 3, 3-OSP-023.1, Diesel Generator Operability Test for the 3B EDG monthly run

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness

1EP6 Drill Evaluation

.1 Simulator Based Training Evolution

On October 1, 2009, the inspectors observed an operating crew in the plant simulator and technical support center staff in the TSC during the fourth quarter emergency plan drill of the site emergency response organization. The drill included an RCS leak and failure of the reactor to trip automatically when required. During the drill, the inspectors assessed operator actions to verify that emergency classification, notification, and protective action recommendations were made in accordance with the emergency plan implementing procedures and 10 CFR 50.72 requirements. The inspectors reviewed the Notice of Unusual Event and Alert classifications and notifications to ensure these were made in accordance with licensee procedure, 0-EPIP-20101, Duties of the Emergency Coordinator. The inspectors also observed whether the initial activation of the emergency response centers was timely and as specified in the licensee's emergency plan. Technical Specifications required actions during the drill were reviewed to assess correct implementation. Drill critique items were discussed with the licensee and reviewed to verify that drill issues were identified and captured in the licensee's corrective action program.

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

Cornerstones: Occupational Radiation Safety (OS) and Public Radiation Safety (PS)

2OS1 Access Controls to Radiologically Significant Areas

a. Inspection Scope

Access Controls: The inspectors evaluated licensee performance in controlling worker access to radiologically significant areas and monitoring jobs in-progress associated with Unit 4 Refueling Outage 25 (U4R25) activities. The inspectors directly observed implementation of administrative and physical radiological controls; evaluated radiation worker (radworker) and health physics technician (HPT) knowledge of and proficiency in implementing radiation protection requirements; and assessed worker exposures to radioactive material.

During facility tours, the inspectors directly observed postings and physical controls for radiation area high radiation area (HRA), locked-HRA (LHRA), contaminated area and potential airborne radioactivity area locations established within the radiologically controlled area (RCA) of the Unit 4 (U4) reactor building (RB), Unit 3 (U3) and U4 reactor auxiliary building (RAB), and radioactive waste (radwaste) processing and storage locations. The inspectors independently measured radiation dose rates or directly observed conduct of licensee radiation surveys for selected RCA areas. Results were compared to current licensee surveys and assessed against established postings and Radiation Work Permit (RWP) controls. Licensee key control and access barrier effectiveness were evaluated for selected U3 and U4 locked-HRA (LHRA) and Very High Radiation Area (VHRA) locations. Implementation of procedural guidance for LHRA and VHRA controls were discussed and verified with health physics (HP) supervisors. Controls and their implementation for storage of irradiated material within the spent fuel pool (SFP) and other RAB locations were reviewed and discussed in detail. Established radiological controls were evaluated for selected U4R25 tasks including bottom mounted instrument (BMI) inspection; steam generator (S/G) primary and secondary system maintenance activities; valve maintenance; spent filter replacement; and reactor head disassembly, lift and reassembly tasks. In addition, licensee controls for areas where dose rates could change significantly as a result of plant shutdown and refueling operations, and for on-going alpha monitoring were reviewed and discussed.

For selected tasks, the inspectors attended pre-job briefings and reviewed RWP details to assess communication of radiological control requirements to workers. Occupational workers' adherence to selected RWPs and HPT proficiency in providing job coverage were evaluated through direct observation of job tasks and observation of remote HP monitoring activities. Electronic dosimeter (ED) alarm set points and worker stay times were evaluated against area radiation survey results for BMI, S/G, reactor head maintenance, and for spent filter replacement activities.

The inspectors reviewed and assessed licensee evaluations of skin dose and internal dose due to radworker contamination events between October 1, 2008, and November 19, 2009, with an emphasis on the current U4R25 outage tasks. For HRA tasks involving significant dose rate gradients, the inspectors evaluated the use and placement of whole body and extremity dosimetry to monitor worker exposure.

Radiation protection activities were evaluated against the guidance in Regulatory Guide (RG) 8.38, Control of Access to High And Very High Radiation Areas in Nuclear Power Plants, and the requirements of Final Safety Analysis Report (FSAR) Section 11; Technical Specifications (TS) Section 6.12; 10 CFR Parts 19 and 20; and approved licensee procedures. Records reviewed are listed in Section 2OS1, 2OS2, and 4OA1 of the report Attachment.

<u>Problem Identification and Resolution:</u> Licensee Corrective Action Program (CAP) documents associated with access control to radiologically significant areas were reviewed and assessed. This included review of selected Condition Report (CR)

documents related to radworker and HPT performance. The inspectors evaluated the licensee's ability to identify, characterize, prioritize, and resolve the identified issues in accordance with procedure PI-AA-204, Condition Identification and Screening Process, Rev. 4. Licensee CAP documents reviewed are listed in Section 2OS1, 2OS2, and 4OA1 of the report Attachment. The inspectors completed 21 of the required line-item samples described in Inspection Procedure (IP) 71121.01.

b. Findings

Introduction: The inspectors reviewed a Self-revealing Green Non-cited Violation (NCV) of Technical Specification (TS) 6.12.2, High Radiation Area, for failure to implement all required controls for an accessible HRA having general area dose rates exceeding 1000 millirem per hour (mrem/hr).

Description: On November 2, 2009, two security officers received ED dose rate alarms, unexpected elevated dose rate measurements of 277 and 279 mrem/hr, while traversing an accessible HRA area on the roof of the U4 RAB HRA adjacent to the spent fuel pool (SFP) building outside wall. Upon receiving the alarm, the officers who were under constant HPT coverage in accordance with established HRA controls, exited the area in a timely manner and received minimal accumulative dose. Historically, this outside area has been prone to elevated dose rates and is controlled as a HRA, i.e., dose rates greater than 100 mrem/hr but equal to or less than 1000 mrem/hr. In addition, the licensee established an inner barricade, posted as a LHRA location, adjacent to the U4 SFP building wall to prevent access to locations where dose rates are know to exceed 1000 mrem/hr during refueling activities due to the proximity of the fuel transfer canal and keyway within the SFP building. As part of the ED alarm investigation, the licensee determined that dose rates greater than 1000 mrem/hr extended beyond this inner LHRA barricade during the U4 R25 refueling activities. The licensee evaluation of radiological conditions during movement of certain high-burnup fuel bundles on November 3, 2009, resulted in general area dose rates at 30 cm outside the established LHRA as high as 1100 mrem/hr.

Prior to calendar year (CY) 2006, licensee radiological controls to prevent inadvertent access to U4 RAB roof HRA locations potentially having dose rates exceeding 1000 mrem/hr during refueling activities were established by the construction and conspicuous posting of a temporary barricade (fence) at a significant distance from the subject U4 SFP building wall. The licensee installed temporary shielding at the base of the SFP building wall on the U4RAB roof in CY 2005, and in CY 2006, subsequently relocated the required U4 RAB roof LHRA barricade closer to the SFP building wall, i.e., adjacent to the shielding in accordance with procedure 0-HPS-025.2, Posting and Survey Requirements for Fuel Movement. Prior to November 2, 2009, radiological surveys of the subject location during U4 outage refueling activities did not identify any areas outside of the LHRA barricade adjacent to the U4 SFP building wall as having dose rates exceeding 1000 mrem/hr. The licensee's evaluation of the security guard ED alarm investigation, identified that previous and current refueling radiation surveys failed to identify significantly elevated dose rates on the wall above the installed shielding which contributed to the general area dose rates exceeding 1000 mrem/hr outside of the established LHRA boundary during the current U4R25 refueling.

Analysis: The failure to implement all TS controls for an HRA with dose rates in excess of 1000 mrem/hr is a performance deficiency. The finding was greater than minor because it was associated with the Occupational Radiation Safety Cornerstone attribute of Program and Process (exposure control) and adversely affected the cornerstone objective to ensure the adequate protection of worker health and safety from exposure to radiation from radioactive material during routine civilian nuclear reactor operations. Failure to adequately identify and control areas with general area dose rates greater than 1000 mrem/hr could lead to unanticipated occupational exposures. The finding was evaluated using the Occupational Radiation Safety Significance Determination Process (SDP) and determined to be of very low safety significance (Green) based on the actual doses received and additional HRA controls in place for accessing the area during refueling activities. The finding was not related to ALARA planning, nor did it involve an overexposure or substantial potential for overexposure, and the ability to assess dose was not compromised. The cross-cutting element of Human Performance, Decision-Making (H.1(b)) was affected when the licensee failed to conduct adequate radiological surveys needed to properly position the LHRA barricade to verify compliance with TS HRA requirements for areas potentially having dose rates exceeding 1000 mrem/hr during the current Unit 4 refueling activities.

Enforcement: TS 6.12.2 requires, in part, that HRAs with dose rates greater than 1000 mrem/hr to be barricaded and conspicuously posted. TS 6.12.2 also requires that such areas be locked or provided with a flashing light if no lockable enclosure exists. Contrary to the above, prior to November 3, 2009, the licensee failed to conspicuously post, barricade, lock, or place a flashing light to control access to an accessible U4 RAB roof HRA location having transient rates greater than 1000 mrem/hr during refueling activities. Because this violation was of very low safety significance and has been entered into the licensee's corrective action program as CR 2009-31494, it is being treated as an NCV, consistent with Section VI.A of the NRC Enforcement Policy: NCV 05000251/ 2009005-01, Failure to Implement Required TS Controls for a HRA with dose rates in excess of 1000 mrem/hr.

2OS2 As Low as Reasonably Achievable (ALARA) Planning and Controls

a. Inspection Scope

ALARA: The inspectors reviewed ALARA program guidance and its implementation for select U4R25 refueling and maintenance tasks. The inspectors evaluated the accuracy of ALARA work planning and dose budgeting, observed implementation of ALARA initiatives and radiation controls for selected jobs in-progress, assessed the effectiveness of source-term reduction efforts, and reviewed historical dose information.

ALARA planning documents and procedural guidance were reviewed and projected dose estimates were compared to actual dose expenditures for the high dose jobs associated with the BMI inspection, S/G primary and secondary side maintenance, scaffolding activities, valve maintenance, and other refueling outage tasks. Differences between budgeted dose and actual exposure received were discussed with plant ALARA staff. Changes to dose budgets relative to changes in radiation source term and/or job scope also were discussed. The inspectors reviewed select radiation protection, chemistry, and operational initiatives instituted to reduce exposure to plant personnel. The inspectors attended pre-job briefings and evaluated the communication of ALARA goals, RWP requirements, and industry lessons-learned to job crew personnel. The inspectors also reviewed ALARA Review Committee meeting minutes, in-progress ALARA reviews, and observed the interface between plant management and ALARA planning staff.

The inspectors made direct field or closed-circuit-video observations of selected outage job tasks. For the selected tasks, the inspectors evaluated radiation worker and HPT job performance; individual and collective dose expenditure versus percentage of job completion; surveys of the work areas, appropriateness of RWP requirements; and adequacy of implemented engineering controls. The inspectors interviewed radiation workers and job sponsors regarding understanding of dose reduction initiatives and their current and expected accumulated doses at completion of the job tasks.

Plant exposure history for the current and previous calendar year and data reported to the NRC pursuant to 10 CFR 20.2206 were reviewed, as were established goals for reducing collective exposure during the current outage. The inspectors reviewed procedural guidance for dosimetry issuance and exposure tracking. The inspectors examined dose records of declared pregnant workers from CY 2007 to November 2009 to evaluate assignment of gestation dose. ALARA program activities and their implementation were reviewed against 10 CFR Part 20, and approved licensee procedures. In addition, licensee performance was evaluated against guidance contained in RG 8.8, Information Relevant to Ensuring that Occupational Radiation Exposures at Nuclear Power Stations will be As Low As Reasonably Achievable and RG 8.13, Instruction Concerning Prenatal Radiation Exposure. Procedures and records reviewed within this inspection area are listed in Sections 2OS1, 2OS2, and 4OA1 of the Attachment.

Problem Identification and Resolution: Licensee CAP documents associated with ALARA program activities were reviewed and assessed. This included review of selected CR documents related to radworker and HPT performance. The inspectors evaluated the licensee's ability to identify, characterize, prioritize, and resolve the identified issues in accordance with procedure PI-AA-204, Condition Identification and Screening Process, Rev. 4. The inspectors also evaluated the scope of the licensee's internal audit program and reviewed recent assessment results. Licensee CAP documents reviewed are listed in Section 2OS1, 2OS2, and 4OA1 of the report Attachment.

The inspectors completed 18 of the specified line-item samples detailed in IP 71121.02.

b. Findings

No findings of significance were identified.

2PS2 Radioactive Material Processing and Transportation

a. Inspection Scope

Waste Processing and Characterization: During inspector walk-downs, accessible sections of the liquid and solid radioactive waste (radwaste) processing systems were assessed for material condition and conformance with system design diagrams. Inspected equipment included floor drain tanks; resin transfer piping; resin and filter packaging components; and abandoned evaporator equipment. The inspectors discussed component function, processing system changes, and radwaste program implementation with licensee staff.

The 2008 Effluent Report and radionuclide characterizations from 2007 - 2009 for each major waste stream were reviewed and discussed with radwaste staff. For primary resin, primary filters, and Dry Active Waste (DAW) the inspectors evaluated analyses for hard-to-detect nuclides, reviewed the use of scaling factors, and examined comparison results between licensee waste stream characterizations and outside laboratory data. Waste stream mixing and concentration averaging methodology for resins and filters was evaluated and discussed with radwaste operators. The inspectors also reviewed the licensee's procedural guidance for monitoring changes in waste stream isotopic mixtures.

Radwaste processing activities and equipment configuration were reviewed for compliance with the licensee's Process Control Program (PCP) and FSAR, Chapter 11. Waste stream characterization analyses were reviewed against regulations detailed in 10 CFR Part 20, 10 CFR Part 61, and guidance provided in the Branch Technical Position (BTP) on Waste Classification and Waste Form. Reviewed documents are listed in Section 2PS2 of the Attachment.

Transportation: The inspectors directly observed preparation activities for a shipment of contaminated outage equipment. The inspectors noted package markings and placarding, performed independent dose rate measurements, and interviewed shipping technicians regarding Department of Transportation (DOT) regulations.

Five shipping records were reviewed for consistency with licensee procedures and compliance with NRC and DOT regulations. The inspectors reviewed emergency response information, DOT shipping package classification, radiation survey results, and evaluated whether receiving licensees were authorized to accept the packages. Licensee procedures for opening and closing Type B shipping casks were compared to Certificate of Compliance (CoC) requirements. In addition, training records and training curricula for selected individuals currently qualified to ship radioactive material were reviewed.

Transportation program implementation was reviewed against regulations detailed in 10 CFR Part 20, 10 CFR Part 71, 49 CFR Parts 172-178, as well as the guidance provided in NUREG-1608. Training activities were assessed against 49 CFR Part 172 Subpart H. Documents reviewed during the inspection are listed in Section 2PS2 of the report Attachment.

Problem Identification and Resolution: The inspectors reviewed selected CRs in the area of radwaste/shipping. The inspectors evaluated the licensee's ability to identify, characterize, prioritize, and resolve the identified issues in accordance with procedure PI-AA-204, Condition Identification and Screening Process, Rev. 4. The inspectors also evaluated the scope of the licensee's internal audit program and reviewed recent assessment results. Licensee CAP documents reviewed are listed in Section 2PS2 of the report Attachment.

The inspectors completed all of the six line-item samples required by IP 71122.02.

b. Findings

Introduction: The inspectors identified an Unresolved Item (URI) regarding the significance of the inappropriate characterization of Reactor Coolant System (RCS) filters for transportation and disposal.

Description: During review of records related to a shipment of RCS filters (shipment W-09-36), the inspectors noted that the filter radionuclide concentrations were based on samples of Chemical and Volume Control System (CVCS) resin rather than representative samples of the filter media. This is contrary to the guidance in NRC's BTP on Waste Classification, Information Notice 86-20, and various industry reports. These documents describe spent resin and primary filters as separate waste streams that require independent, representative, sampling of each. This is due to the different properties of ion exchange resins and mechanical filters which tend to concentrate radioactive contaminants in differing concentrations. Discussions with shipping/radwaste staff indicated that this has been the practice for approximately five years.

In order to disposition the significance of this finding, the NRC requires a comparison of 10 CFR Part 61 analyses for the CVCS resin and RCS filter waste streams. The BTP states that, "The staff considers a reasonable target for determining significant differences between measured or inferred radionuclide concentrations in separate samples is that the concentrations are accurate to within a factor of 10." If significant differences are identified, an analysis of the impact (significance) on any previous filter shipments to determine if any waste was misclassified also may be necessary. URI 05000250/251, 2009005-02, Evaluate Inappropriate Characterization of Reactor Coolant System (RCS) Filters for Transportation and Disposal.

4. OTHER ACTIVITIES

4OA1 Performance Indicator (PI) Verification

a. Inspection Scope

The inspectors sampled licensee records to verify the accuracy of reported Performance Indicator (PI) data for the periods listed below. To verify the accuracy of the reported PI elements, the reviewed data were assessed against guidance contained in NEI 99-02, "Regulatory Assessment Indicator Guideline," Rev. 6.

Occupational Radiation Safety Cornerstone: The inspectors reviewed PI data collected from April 1, 2008, through September 30, 2009, for the Occupational Exposure Control Effectiveness PI. For the reviewed period, the inspectors assessed CAP records to determine whether HRA, VHRA, or unplanned exposures, resulting in TS or 10 CFR 20 non-conformances, had occurred during the review period. In addition, the inspectors reviewed selected personnel contamination event data, internal dose assessment results, and ED alarms for cumulative doses and/or dose rates exceeding established set-points. The reviewed documents relative to this PI are listed in Sections 2OS1, 2OS2, and 4OA1 of the Attachment.

Public Radiation Safety Cornerstone: The inspectors reviewed the Radiological Control Effluent Release Occurrences PI results for the Public Radiation Safety Cornerstone from April 1, 2008, through September 30, 2009. For the assessment period, the inspectors reviewed cumulative and projected doses to the public and CRs related to Radiological Effluent Technical Specifications/Offsite Dose Calculation Manual issues. The inspectors also reviewed licensee procedural guidance for collecting and documenting PI data. Documents reviewed are listed in section 4OA1 of the Attachment.

4OA2 Problem Identification and Resolution

.1 Daily Review

a. Inspection Scope

As required by Inspection Procedure 71152, Identification and Resolution of Problems, and to help identify repetitive equipment failures or specific human performance issues for follow-up, the inspectors performed a screening of items entered daily into the licensee's corrective action program. This review was accomplished by reviewing daily printed summaries of condition reports and by reviewing the licensee's electronic condition report database. Additionally, reactor coolant system unidentified leakage was checked on a daily basis to verify no substantive or unexplained changes.

b. Findings

No findings of significance were identified.

.2 Annual Sample Review

a. Inspection Scope

The inspectors selected the following condition reports for detailed review and discussion with the licensee. Condition Report (CR) 2008-8164 was reviewed to ensure that an evaluation was performed and appropriate corrective actions were specified and completed in a timely manner as they relate to the areas identified for attention in the site's employee concern program (ECP). The inspectors reviewed whether the areas of recommendations contained in Performance Objective 3, Evaluate ECP Effectiveness, in Self Assessment 2007-37715, were entered into the corrective action program and addressed. The inspectors reviewed NA-AA-200, Employee Concerns Program Process Description, revision 2, and verified recommendations and areas for attention in the aforementioned CR, were included in the program procedure. The inspectors reviewed random samples of ECP files and found the ECP program procedure was being implemented through completion with the exception of one sample. This was promptly captured in CR 2009-28497, corrective action was taken, and an extent of condition of all the files was conducted by the ECP coordinator. The inspectors evaluated the condition report in accordance with the requirements of the licensee's corrective actions process as specified in NAP-204, Condition Reporting.

- CR 2008-8164, Self Assessment for the Employee Concerns Program Areas for Attention
- CR 2007-40769, A degraded but operable condition in the Unit 3 spent fuel pool needs to be tracked as a GL 91-08 issue

b. Findings

The following apparent violations were identified. The findings were potentially of greater than very low safety significance.

.1 Introduction: (TBD) The NRC identified an Apparent Violation of Technical Specification requirements when the inspectors found that FPL testing and analysis of Boraflex degradation in the Unit 3 spent fuel pool invalidated design assumptions used to assure subcriticality in the spent fuel pool when loaded with fuel assemblies. In one case, due to the lack of administrative controls, the inspectors found that a spent fuel pool cell (L38) remained in service without remedial actions after testing results specified that remedial actions were required. In a second case, the licensee identified a cell that remained in service, (F19) loaded with a fuel assembly after having been determined to require a Boraflex remedy in accordance with the licensee's program.

Description: Turkey Point Technical Specification Bases, 3/4 .9.14, states that the spent fuel storage racks provide safe subcritical storage of fuel assemblies by providing sufficient poison to assure a) Keff <0.95 with a minimum soluble boron concentration of 650 PPM present, and b) Keff <1.0 when flooded with unborated water for normal operations and postulated accidents. Further, Technical Specification 5.5.1.1.a, states that the spent fuel pool shall be maintained with Keff equivalent less than 1.0 when flooded with unborated water, which includes a conservative allowance for uncertainties as described in UFSAR Appendix 14D.

In Generic Letter 96-04, issued on June 26, 1996, the NRC informed licensees that the fuel storage rack poison, Boraflex, could degrade beyond design allowable limits affecting the ability of the poison to assure subcriticality of stored fuel. FPL initiated a program to monitor Boraflex degradation in the Unit 3 spent fuel pool and degradation of the spent fuel pool Boraflex had been observed by FPL as dissolved silica in the pool water, pool residue containing silica, and neutron attenuation (BADGER) testing that revealed degradation rates in Boraflex panels greater than predicted. Since 2001, FPL had found degradation of Boraflex panels greater than assumed in safety evaluations for the spent fuel pool, and had incrementally taken steps to assure the subcritical storage of fuel, including administratively requiring water holes first as 1/4 pattern, then 2/4 checkerboard pattern in the region of the pool suspected to have the highest degradation. Also, rod cluster control assemblies (RCCAs) were placed in stored fuel to maintain subcritical margins, and other administrative limitations were placed on storage of fuel in many of the areas of the pool most susceptible to Boraflex loss. Throughout this time, FPL did not maintain the UFSAR description of activities related to fuel storage in the pools, instead considering the Boraflex degradation to be a degraded condition that would be remedied. A 2007 FPL analysis of fuel storage in the Unit 3 spent fuel pool, PTN-ENG-SEFJ-07-018, Rev 0, concluded that a Boraflex remedy (i.e. activities) would be required to assure subcritical conditions in the pools by February 15, 2008. On January 27, 2006, FPL submitted a Boraflex remedies license amendment (request 178), which was approved and issued on July 17, 2007, however as of the time of this inspection, the amendment has not been implemented.

The inspectors identified the following discrepancies in the UFSAR description of fuel storage activities at Turkey Point:

What the UFSAR says:	What FPL does:
Design Basis, Criticality shall be prevented by physical systems and processes. Such means as geometrically safe configuration shall be emphasized over procedural controls. The spent fuel storage racks are designed to maintain subcritical conditions with unborated water in the SFP. (Section 9.5.2.3); Criticality of fuel assemblies in fuel storage is prevented by the design of the racks which limits fuel assembly interaction. The 95/95 basis Keff will be less than 1.0 without the presence of soluble boron. (Similar descriptions are listed in the Turkey Point Technical Specification Bases 3/4 9.14).	Administratively controlled storage arrays including water holes and Rod Cluster Control Assemblies were used to maintain Keff margins in areas of the pool most susceptible to Boraflex degradation beyond design limits. Without these administrative controls, a level of soluble boron was required to maintain Keff <1.0 in areas with Boraflex degradation. Boraflex degradation beyond design limits (50% loss) had been found in other areas of the pool.
UFSAR: 9.5.2.3; SFP Region 1, with no soluble boron Keff = 0.9615, Region II Keff = 0.97217	The required soluble boron concentration to offset a misloaded fuel assembly remains unchanged from a value of 450 ppm as stated in TP LAR L-99-176 (Nov 30, 1999).
UFSAR (pg 9.5-12) Boron Depletion Analysis, The most limiting case obtained with gaps and shrinkage, was a reduction of nominal B-10 areal density and Boraflex thickness by 55% for Region I racks and 50% for Region II racks with no change in Boraflex thickness. The final keff on a 95/95 basis for Region I Keff equals 0.99976; for Region II keff equals 0.99919	Turkey Point was managing spent fuel pool Boraflex degradation using a computer model RACKLIFE. Neutron attenuation (BADGER) testing was done on the Unit 3 spent fuel pool in 2001, 2004, and 2007. Because as build data on Boraflex installed in the pool was not available, an Unirridated reference panel was used for evaluating the testing and some panels showed degradation greater (2-3 times) than predicted in the RACKLIFE model and below that assumed in UFSAR analyses.

The analytical methods utilized in the criticality analyses conform to those measures identified in Westinghouse Spent Fuel Rack Criticality Analysis methodology, WCAP-14416-NP-A, November 1996; American Nuclear Society, American National Standard Design Requirements for Light Water Reactor Spent Fuel Storage Facilities, October 7, 1983; and US NRC, Standard Review Plan, Spent Fuel Storage July 1981, et.al.	Calculations were done to support continued operability of the pool using data from RACKLIFE. FPL calculation, PTN-ENG-SEFJ-07-018, Rev 0, results, "several region 2 panels (a listing of 184 panels in RII with degradation greater than 50% provided) will exceed the maximum allowed loss (55% for Region I and 50% for Region II to assure Keff <1.0) by the end of Cycle 23. (March 09). A Boraflex remedy will need to be implemented no later than February 15, 2008. A list of prohibited spent fuel pool storage locations (w/o Boraflex remedy) is provided. Badger testing results provided to NRC in FPL letter L-2009-264, pg 12 of 14, Region II, Measured Vs. Predicted, Test Year 2007, Cell L38, measured degradation from the assumed unirradiated panel was -55.90%. This cell remained in service without any remediation. A second cell (F19) had BADGER testing results that showed that a Boraflex remedy was required, but this cell remained in service.

FPL wrote condition report 2001-0234 in February 2001, stating that the results of Boraflex testing indicate that the panels in Region II of the spent fuel pool have experienced non-uniform degradation that may be beyond that assumed in criticality analyses. Testing in 2004 revealed one Boraflex panel (R19 East) that exceeded predicted degradation above the -50% level described in the UFSAR (-31.56% predicted by RACKLIFE versus -62.5% observed). The testing program was a sampling program that was used to infer conditions throughout the pool. Testing in 2007 revealed another panel with greater than 50% degradation (L38, -55.90%). This cell remained in service without administrative controls. Another cell (F19) had two panels that were projected to exceed 50% B4C (boron) loss by August 2009 and although a Boraflex remedy should have been prescribed, due to an administrative error, the cell remained in service without a Boraflex remedy until November 2009. Licensee procedure 0-ADM-556, Fuel Assembly and Insert Shuffles, Step 3.1.4, requires that the (FPL) Nuclear Fuel Department determine storage cells that exceed panel Boraflex loss criteria and the dates that the cells are prohibited from use without an approved Boraflex remedy. In both cases, (L38 and F19), licensee calculations showed margin to criticality in a postulated boron dilution event.

Condition Report 2004-3226 documented that Boraflex areal density for one panel of storage cell R-19 was below that assumed in the Safety Evaluation Report for the spent fuel pool criticality analysis. Further the degradation occurred at an estimated absorbed dose lower than expected. The condition report also stated that there was no operability concern and that the condition was not reportable because the Technical Specification limit for soluble boron (1950 ppm) was greater than the analysis value to assure subcriticality (1382 ppm). Technical Specification 5.5.1.1 stated that the spent fuel pool shall be maintained with a Keff less than 1.0 when flooded with unborated water using the conservative allowance for uncertainties as described in the UFSAR.

Condition Report 2007-40769 documented that some of the Boraflex panels in the Unit 3 spent fuel pool were predicted to degrade beyond the design basis assumed areal density, and that compensatory measures were required to satisfy Technical Specification requirements. Testing documented in FPL letter to NRC dated May 16, 2001, revealed the west panel of storage cell M16, with degradation beyond that assumed in the criticality analysis (0.006 gm-B10/cm2). However, the operations department operability screening in the condition report, stated that, "This is an administrative issue that does not affect compliance with Technical Specifications." The inspectors found that the use of compensatory measures to maintain design margins, although in place for more than five years, had not been included in the UFSAR descriptions. The licensee could not demonstrate to the inspectors that the compensatory measures had been appropriately screened to assure that an NRC licensing action was not required.

The Turkey Point spent fuel pools are exterior to containment and there were no criticality monitors in the vicinity of the pools. The licensee did not have procedures to mitigate an inadvertent criticality in the spent fuel pool. The licensee stated that additional measures would be required to assure subcriticality should a full core offload of Unit 3 be required.

Analysis: The NRC provided information to licensees that Boraflex degradation could affect safety of spent fuel pools in NRC Information Notice 87-43 and requested action in Generic Letter 96-04. Failure to maintain the Unit 3 spent fuel pool in a condition required by Technical Specification requirements including Keff less than 1.0 when flooded with unborated water including conservative allowance for uncertainties as described in the UFSAR was a performance deficiency. This finding was considered more than minor because the design control attribute that assured fuel assemblies remain subcritical in the spent fuel pool was affected. The Initiating Events cornerstone was affected. The finding was determined to potentially have greater significance because of the lack of both criticality monitoring capability in the spent fuel pool and procedures for responding to an inadvertent criticality event. The inspectors evaluated this finding against NRC IMC 0609 Phase 1 Screening Worksheet for Initiating Events, Mitigation Systems, and Barriers Cornerstones. The inspectors determined that IMC 0609, Appendix M is required to determine the level of safety significance of this finding because the existing SDP guidance is not adequate to provide reasonable estimates of the finding significance within the established SDP timeliness goal of 90 days. NRC staff is currently reviewing this finding to determine the level of safety significance or enforcement aspect of the issue.

Failure to make a required report to the NRC in accordance with NRC Administrative Letter 98-10, and 10 CFR 50.73 of the failure to meet technical specification requirements was a performance deficiency. The finding was more that minor because it impacted the regulatory process which depends on plant activities being properly reported. The Initiating Events cornerstone was affected. The inspectors evaluated this finding against NRC IMC 0609 Phase 1 Screening Worksheet for Initiating Events, Mitigation Systems, and Barriers Cornerstones. The inspectors determined that IMC 0609, Appendix M is required to determine the level of safety significance of this finding because the existing SDP guidance is not adequate to provide reasonable estimates of the finding significance within the established SDP timeliness goal of 90 days. NRC staff is currently reviewing this finding to determine the level of safety significance or enforcement aspect of the issue.

Failure to address the known degradation of Boraflex in a timely manner to prevent operation of the Unit 3 spent fuel pool outside of design (specifically for storage cells F19 and L38) was a performance deficiency. This finding was considered more than minor because the design control attribute that assured fuel assemblies remain subcritical in the spent fuel pool was affected. The Initiating Events cornerstone was affected. The inspectors evaluated this finding against NRC IMC 0609 Phase 1 Screening Worksheet for Initiating Events, Mitigation Systems, and Barriers Cornerstones. The inspectors determined that IMC 0609, Appendix M is required to determine the level of safety significance of this finding because the existing SDP guidance is not adequate to provide reasonable estimates of the finding significance within the established SDP timeliness goal of 90 days. NRC staff is currently reviewing this finding to determine the level of safety significance or enforcement aspect of the issue.

Failure to appropriately screen compensatory measures used to assure subcritical conditions in the spent fuel pools at Turkey Point and the resulting failure to maintain the UFSAR descriptions was a performance deficiency. As a result, the UFSAR did not accurately describe the uncertainties used to maintain design margins in the Unit 3 spent fuel pool and fuel storage was not in compliance with Technical Specification 5.5.1.1 requirements. Appropriate corrective actions such as those contained in a license amendment which provided Boraflex remedies, issued by the NRC on July 17, 2007, had not been implemented and FPL sought additional licensing actions for Unit 4 to assure compliance. The Unit 3 spent fuel pool remains in non-compliance. The finding was more than minor because it impacted the regulatory process which depends on plant activities being properly documented. The Initiating Events cornerstone was affected. The inspectors evaluated this finding against NRC IMC 0609 Phase 1 Screening Worksheet for Initiating Events, Mitigation Systems, and Barriers Cornerstones. The inspectors determined that IMC 0609, Appendix M is required to determine the level of safety significance of this finding because the existing SDP guidance is not adequate to provide reasonable estimates of the finding significance within the established SDP timeliness goal of 90 days. NRC staff is currently reviewing this finding to determine the level of safety significance or enforcement aspect of the issue.

Enforcement:

Apparent Violation: TS 5.5.1.1 states that the Unit 3 spent fuel storage racks are designed to provide safe subcritical storage of fuel assemblies and shall be maintained with Keff equivalent to less than 1.0 when flooded with unborated water, which includes a conservative allowance for uncertainties as described in UFSAR Appendix 14D. UFSAR Appendix 14D, which refers to Turkey Point UFSAR Section 9.5, Fuel Storage and Handling, states that criticality of fuel assemblies in fuel storage is prevented by the design of the racks which limits fuel assembly interaction. The UFSAR states that in the criticality analysis, all available storage cells were loaded with fuel assemblies and that with no soluble boron present, the fuel racks will remain subcritical. The most limiting case of Boron Depletion (to assure subcriticality) was a reduction of B-10 areal density in Region II of the spent fuel pool by 50%. Contrary to the above, due to dissolution of Boraflex panels in the Turkey Point Unit 3 spent fuel storage racks, Keff was not maintained less than 1.0 for all cases if loaded with fuel assemblies and flooded with unborated water. Test results from 2001 and subsequent tests showed cells that remained in service with degradation greater than the assumed 50% in the UFSAR analyses. When identified to the licensee by the NRC the Unit 3 spent fuel pool was borated to greater than 2100 ppm boron and the issue was documented in condition report 2009-34470. Additional actions were planned. (AV 05000250/2009-005-03)

Apparent Violation: 10 CFR Part 50.73(a)(2)(B), states that the licensee shall report (to the NRC), any condition which was prohibited by the plant's technical specifications. Technical specification 5.5.1.1 states that the Unit 3 spent fuel storage racks are designed to provide safe subcritical storage of fuel assemblies and shall be maintained with Keff equivalent to less than 1.0 when flooded with unborated water, which includes a conservative allowance for uncertainties as described in UFSAR Appendix 14D such as a reduction in Boraflex density no greater than 50% in spent fuel pool Region II. Contrary to the above, as of December 2009 a condition prohibited by Technical Specifications was not reported to the NRC after testing of Boraflex panels in 2004 in the Unit 3 spent fuel pool revealed degradation greater than assumed in criticality analyses for region II panel R19 East. Because the FPL program for determining degradation of cells was a sampling program, the state of other cells could not be determined. When identified to the licensee by the NRC, condition report 2009-30043 was written to evaluate and report the non-compliance with Technical Specifications to the NRC. (AV 05000250/2009-005-04)

Apparent Violation: 10 CFR Part 50, Appendix B, Criterion XVI, Corrective Action, states, in part, that measures shall be established to assure that conditions adverse to quality are promptly identified and corrected. Turkey Point UFSAR page 9.5-12, states that the most limiting case obtained to assure Keff less than 1.0, in Unit 3 spent fuel pool, Region II was a reduction of Boraflex nominal thickness by 50%. FPL procedure 0-ADM-556, Fuel Assembly and Insert Shuffles, Step 3.1.4, requires the Nuclear Fuels Department to determine spent fuel pool storage cells that exceed Boraflex panel loss and the dates the cells are prohibited from use without an approved Boraflex remedy established. Contrary to the above, a condition adverse to quality, degradation of Boraflex in the Unit 3 spent fuel pool cells was not promptly corrected such that since 2007, spent fuel pool storage cells with degradation greater than assumed in criticality analyses, (L38, for example) remained in service without an approved Boraflex remedy. This condition was not in compliance with licensee procedural requirements when dates when the cells must be removed from service were not established. When identified to the licensee by the NRC, condition report 2009-32948 was written to document the non-compliance and an analysis was performed to assure adequate shutdown margin for cells L38 and F19. Additional corrective actions were planned to restore compliance. (AV 05000250/2009-005-05)

Apparent Violation: 10 CFR Part 50.71(e) requires that licensees periodically update their final safety analysis report so that the report contains effects of changes made to the facility such that the FSAR is complete and accurate. Further, the updated information is to be located within the update to the FSAR. Contrary to the above, as of December 2009 changes made to manage the Unit 3 spent fuel pool since 2001, including neutron attenuation testing methods and results, computer programs such as RACKLIFE, and the use of alternate means of assuring that the spent fuel remains shutdown, such as rod control cluster assembly inserts, and water holes, were not described in the FSAR. When identified to the licensee by the inspectors, the licensee documented the issue in condition report 2009-34470, and informed the NRC (in letter L-2009-295, dated December 31, 2009) of plans to make appropriate updates to the FSAR descriptions by March 15, 2010. (AV 05000250/2009-005-06)

.2 Semi-Annual Trend Review

As required by Inspection Procedure 71152, Identification and Resolution of Problems, the inspectors reviewed the licensee's corrective action program and associated documents to identify trends that could indicate the existence of a more significant safety issue. The inspectors' review was focused on repetitive equipment issues, but also considered the results of daily inspector corrective action items screening discussed in section 4OA2.1 above, plant status reviews, plant tours, document reviews, and licensee trending efforts. The inspectors' review nominally considered the six month period of July-December 2009.

Assessment and Observations

No findings of significance were identified. The inspectors noted a trend in the area of operator workaround and burden screening. While operators were identifying equipment deficiencies and writing work requests to repair equipment problems, the inspectors identified three equipment deficiencies in the control room where operator workaround/operator burden screenings were not completed. When brought to FPL's attention, these items were screened as minor operator burdens and added to the operator workaround/burdens list. FPL defined a minor operator burden as a minor equipment deficiency, which, although it may distract operators during their day-to-day routine, does not place an unreasonable burden on operators or the operator's ability to operate and monitor the plant. Because the screenings were not promptly completed, equipment deficiencies were not being tracked to evaluate the aggregate impact to the operators. Condition Report 2009-35793 was initiated by FPL to address this trend. The three examples identified by the inspectors were:

- Plant work order 37001942-01, associated with control room valve position indication POS-4-1419, steam generator feedpump recirculation valve CV-4-1415, requiring operators to verify position locally in the field after a feedpump trip
- Plant work order 39013509-01, associated with CV-3-1416, steam generator feedwater recirculation control valve which has dual indication in the control room, requiring operators to verify position locally in the field after a feedpump trip
- Plant work order 39023172-01, associated with the motor operated spent fuel pit exhaust fan discharge damper (MO-3-3402) not indicating correct position in the control room, requiring operator verify position locally in the field

4OA3 Event Follow-up

.1 (Closed) Licensee Event Report (LER) 50-250/2009-002-00, Main Steam Isolation Valve (MSIV) drain line leak causes Technical Specifications required shutdown; failure to perform PMT causes inoperable MSIV and its supplement LER 50-250/2009-0002-01.

On May 4, 2009, during restart of unit 3 from a refueling outage, plant personnel found steam leaking from the bottom of the 3C MSIV in the area where the weld boss joins the valve body. Technical Specifications 3.4.10 and 3.0.3 were entered and a unit shutdown was initiated. The 3C MSIV did not close on demand, was declared inoperable, and TS 3.7.1.5 was entered. Condition Reports 2009-13544 and 2009-13568 were initiated to address the 3C MSIV drain line leak and failure of the valve to close on demand. The licensee determined that the root cause of the 3C MSIV drain line leak was determined to be poor welding workmanship on the initial weld duel to limited accessibility, leading to a lack of fusion in the weld between the boss and the reducing insert. The root cause of the 3C MSIV failure to close on demand was attributed to inadequate post maintenance test following a packing adjustment on MSIV air throttle valve 5-5304. Corrective actions included repairing the drain line leak, examining the other MSIVs drain lines for flaws, revising the welding standard to include additional requirements for limited accessibility piping, updating the PMT procedure to require an IST timing stroke for components that could be affected by working passive throttle valves, including passive valves that affect safety function of IST components in the IST program, training personnel on independent verification reviews, and training personnel on configuration control processes pre-outage. Failure of the 3C MSIV to close on demand was a self-revealing non-cited violation of TS 3.7.1.5 and addressed in section 1R04 of inspection report 05000250/2009003. The NRC identified a non-cited violation of TS 3.4.10 on unit 3 when plant operation continued although a structural flaw in class 2 MSIV steam trap piping had been identified and addressed this violation in section 1R20 of inspection report 05000250/2009003. This LER is closed.

4OA5 Other Activities

(Closed) TI 05000250, 251/2515/173, Review of the Implementation of the Industry Ground Water Protection Voluntary Initiative

a. Inspection Scope

The inspectors reviewed elements of the licensee's environmental monitoring program to evaluate compliance with the voluntary Groundwater Protection Initiative (GPI) as described in Nuclear Energy Institute (NEI) 07-07, Industry Ground Water Protection Initiative – Final Guidance Document, August 2007 (ADAMS Accession Number ML072610036). Inspectors interviewed personnel, performed walk-downs of selected areas, and reviewed the following items:

- Records of the site characterization of geology and hydrology
- Evaluations of systems, structures, and or components that contain or could contain licensed material and evaluations of work practices that involved licensed material for which there is a credible mechanism for the licensed material to reach the groundwater
- Implementation of an onsite groundwater monitoring program to monitor for potential licensed radioactive leakage into groundwater
- Procedures for the decision making process for potential remediation of leaks and spills, including consideration of the long term decommissioning impacts
- Records of leaks and spills recorded, if any, in the licensee's decommissioning files in accordance with 10 CFR 50.75(g)
- Licensee briefings of local and state officials on the licensee's groundwater protection initiative
- Protocols for notification to the local and state officials, and to the NRC regarding detection of leaks and spills
- Protocols and/or procedures for thirty-day reports if an onsite groundwater sample exceeds the criteria in the radiological environmental monitoring program
- Groundwater monitoring results as reported in the annual effluent and/or environmental monitoring report
- Licensee and industry assessments of implementation of the groundwater protection initiative

b. Findings

No findings of significance were identified with the licensee's implementation of NEI 07-07. This completes the NRC Region II inspection requirements.

4OA6 Meetings, Including Exit

Exit Meeting Summary

The resident inspectors presented the inspection results to Mr. Kiley and other members of licensee management on January 14, 2010. The inspectors asked the licensee whether any of the material examined during the inspection should be considered proprietary information. The licensee did not identify any proprietary information.

ATTACHMENT: SUPPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee personnel:
J. Antignano, Fire Protection Supervisor
R. Coffey, Maintenance Manager
J. Hamm, Engineering Manager
S. Shafer, Assistant Operations Manager
M. Kiley, Site Vice-President
L. Hardin, Emergency Preparedness Manager
R. Wright, Operations Manager
P. Rubin, Plant General Manager (Acting)
M. Crosby, Quality Manager
N. Bach, Chemistry Manager
C. Cashwell, Radiation Protection Manager
R. Tomonto, Licensing Manager

NRC personnel:
M. Sykes, Branch Chief, DRP
L. Wert, Director, Division of Reactor Projects, Region II

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Opened and Closed

05000251/2009005-01	NCV	Failure to Implement Required TS Controls for a High Radiation Area with Dose Rates in Excess of 1000 mrem/hr (Section 2OS1).

Opened

05000250&251/2009005-02	URI	Evaluate Inappropriate Characterization of Reactor Coolant System (RCS) Filters for Transportation and Disposal. (Section 2PS2)
05000250/2009-005-03	AV	Violation of Technical Specification 5.5.1.1 regarding Unit 3 spent fuel storage with degrading Boraflex poison. (Section 4OA5)
05000250/2009-005-04	AV	Failure to report Unit 3 spent fuel pool operation with degrading Boraflex. (Section 4OA5)
05000250/2009-005-05	AV	Failure to implement corrective actions regarding the Unit 3 spent fuel pool operation with degrading Boraflex. (Section 4OA5)

05000250/2009-005-06	AV	Failure to maintain FSAR description of Unit 3 spent fuel pool activities. (Section 4OA5)

Closed

05000250, 251/2515/173	TI	Review of the Implementation of the Industry Ground Water Protection Voluntary Initiative (Section 4OA5)

Closed

50-250/2009-002-00	LER	Main Steam Isolation Valve (MSIV) drain line leak causes Technical Specifications required shutdown
50-250/2009-002-01	LER	Main Steam Isolation Valve (MSIV) drain line leak causes Technical Specifications required shutdown

LIST OF DOCUMENTS REVIEWED

Section 1R08, Inservice Inspection (ISI) Activities

Procedures
Operating Instructions for Ranger in Re-circulating Steam Generators, Doc: 03-9052292, Rev 6
AREVA/TPN 3 & 4, Eddy Current Data Analysis Guidelines, Fall 2009
AREVA Written Practice for Personnel Qualification in Eddy Current Examination, Procedure #54-ISI-24-31
Boric Acid Corrosion Control Program Turkey Point Plant, 0-ADM-537 Rev 1
Component, Support & Inspection Ultrasonic Examination of Austenitic Piping Welds Rev. 18

Calculations
None

Corrective Action Documents (CR)
TP CR 2009-31128, 9 Tubes in SG 4A and 4B that were not hydraulically expanded within the tubesheet during fabrication
AREVA Apparent Cause Evaluation for CR 2006-13224, Excessive Data Collected at PSL2 in April 2006
TP CR 2009-30722, Dry boric acid from 72 hour walkdown
TP CR 2009-30283, Result of Initial Leak Inspection per 0-OSP-041.26

Other
Observed calibration of Ranger and Machine Vision in preparation of Bobbin Coil exam on SG “C,” cold leg inspection.
Observed ECT QDA perform Resolution on Bobbin Coil and +Point data.
Turkey Point Unit 3 & 4 Steam Generators, Degradation Assessment, Update for Unit 4 End-of-Cycle 24 refueling Outage, Doc: PTN-ENG-SESJ-09-025

Turkey Point Units 3 & 4, License Amendment Request, Number 197, for H*: Alternate Repair Criteria for Steam Generator Tubesheet Expansion Region, July 23, 2009
Turkey Point Unit 4: Position of the Bottom of Tubesheet Expansion Transition, September 30, 2009
Safety Evaluation Report for TP Units 3 & 4, Issuance of Amendments Regarding SG Tube Surveillance Program, April 27, 2007
AREVA Calibration Standard for Primary and Secondary analysts, 08/10/09
AREVA Calibration certifications for MIZ-80's used during TP Unit 4, RFO 24
AREVA, INTEC, ZETEC, ANATEC, and MORE TECH Qualifications and Training records
AREVA, Examination Technique Specification Sheet for Bobbin Coil (ETSS #1, Rev 0), MRPC TTS & Special Interest (ETSS #2, Rev 0), Low Row U-Bend HF +Point (ETSS #4, Rev 0)
AREVA Apparent Cause Evaluation for CR 2006-13224, Excessive Data Collected at PSL2 in April 2006
FPL Unique Traveler for Containment Spray Recirc Piping Pipe to Elbow for FW-3509
UT Calibration Data Sheet for 10" SI-2407-4 Pipe to Valve 4-885
Transducer Certification For Transducer S/N 00YLLP
PDI Program Qualification for MacLean, Duncan J. for Austenitic and Ferritic Pipe Welds using PDI-UT-1 and PDI-UT-2 dated 08/23/2005

Section 2OS1: Acess Controls to Radiologically Significant Areas

Procedures, Guidance Documents, and Manuals
0-HPS-025.2, Posting and Survey Requirements for Fuel Movement, Rev. 3/31/09
Radiation Protection Procedure (RP)-SR-102-1001, Area Radiological Surveys and Analysis, Rev. 1
RP-SR-103-1002, High Radiation Area Controls, Rev. 1
RP-SR-103-1001, Posting Requirements for Radiological Hazards, Rev. 1
RP-TP-103-2003, Crud Burst Monitoring Requirements, Rev 0A
PI-AA-204, Condition Identification and Screening Process, Rev. 4
0-General Maintenance Procedure (GMM)-043.13, Reactor Vessel Head Installation, Rev. 5B
Radiation Work Permit (RWP) 09-0003, Security Activities, Rev. 2
RWP 09-0004, Routine Maintenance, (Non High Radiation Area), Rev. 4
RWP 09-0015, Spent Fuel Room Activities, Rev. 05
RWP 09-4009, Valve Maintenance, Rev. 05
RWP 09-4012, Scaffold Work, Rev. 1
RWP 09-4014, Reactor Sump, Rev. 2
RWP 09-4019, Steam Generator Primary Side Work, Rev. 1
RWP 09-4020, Steam Generator Secondary Side Work, Rev. 2
RWP 09-4026, Bottom Mounted Instrumentation Project (BMI), Rev. `
RWP 09-4104, Reactor Upper Internals – Remove and Replace, rev. 2
RWP 09-4107, Reactor Head Set (from stand to cavity), Rev. 1
RWP 09-4206, Outage Locked High Radiation Area Work, rev. 1
RWP 09-4205, Outage Filter Change Outs, Rev. 2
RWP 09-4207, Outage Valve Maintenance (Non containment), Rev. 1
RWP 09-4210, Outage Spent Fuel Room Activities, Rev. 2

Records and Data Reviewed

Exposure Investigation Reports 09-140 and 09-141, 11/3/09

RP-SR-103-1001-F01, High Radiation Area Posting Change Checklist, 10/30/09

Survey 09-7339, U4 Reactor Cavity

Survey 09-7366, U4 Reactor Sump

Survey 08-1817, U4 “C” Secondary Handholes

Auxiliary Building Roof Survey Numbers: 09-4008, 06/03/09; 09-5292, 09/09/09; 09-6431, 11/2/09; 09-6467, 09-6519, 11/3/09; 11/3/09; 09-7290, 11/16/09;

U4 Fuel Movement Surveys: 09-7182, 11/14/09;

Auxiliary Building Roof – U4 HRA Boundary – Followup surveys at select locations associated with elevated dose rates during fuel movement; 11/02-16/2009

Crud Burst Dose Rate Monitoring Data 10/27/09 (00:00-22:00 hours), U4 R-20 Letdown, U4 Pipe, and Valve Residual Heat Removal Inlet, U4 CPR Letdown, Outside (O/S) Biowall 200 Valves, O/S Biowall 751 Valve, O/S Biowall Excess Letdown Heat Exchanger, Inside (I/S) Biowall ‘A’, I/S Biowall ‘C’ Loop, Steam Generator (S/G) Loop, I/S Biowall ‘B’ S/G Loop, Survey 09-5781, Unit 4 (U4) Containment Spray Pump Room, 10/13/09

Survey 09-5875, U4 Containment Spray Pump Room, 10/19/09

Survey 09-6030, U4 Charging Pump Room, 10/26/09

Radioactive Waste Tracking Inventories: Number 2 Cask / Flux Map Detectors, 05/02/09,

Radioactive Waste Tracking Inventories: Flux Map Cables, 10/09

U3 and U4 Spent Fuel Pool, Status of cells with trash baskets and with loose trash 10/2009

Turkey Point Nuclear Non-fuel special nuclear material RWB HLWS Cask Contents, RWB Cage Contents, North Evaporator Room Contents, and PASS Room Contents, 10/28/09

U4R25 Personnel Contamination Event Summary, 10/26/09 – 11/19/09

U3R24 Personnel Contamination Event Summary, 3/16/09 – 5/6/09

Corrective Action Program (CAP) Documents

Quality Assurance Audit, Plant Turkey Point Nuclear (PTN), Audit Number 09-02, Radiation Protection Functional Area Audit, January 21 – February 20, 2009

Condition Report (CR) 2009-9472, Worker outside of Unit 3 (U3) biowall on 14 foot elevation received a dose alarm

CR 2009-10284, Damage to Turkey Point U3 rod cluster control assembly D-6 while lowering reactor vessel head, Root Cause Evaluation Report

CR 2009-15766, Enhancement actions from self-assessment 2009-0154, High Radiation Program Self-Assessment

Section 2OS2: ALARA

Procedures, Guidance Documents, and Manuals

0-Administrative Procedure (ADM) – 602, ALARA Program, Rev. 2/9/06C1

Turkey Point Nuclear Plant, 5-Year ALARA Plan, 2009-2013, Rev. 0

Records and Data Reviewed

ALARA Review Number (No.) 2009-067, Eddy current testing of all three steam generators, 10/25/09

ALARA Review No. 2009-068, Steam generator bundle flush, sludge lance, and FOSAR during the Unit 4 (U4) refueling outage, 10/25/09

ALARA Review No. 2009-050. Inspect bottom mounted instrumentation nozzles under the rector
vessel for evidence of leakage, 10/25/09
ALARA Review No. 2009-055, Scaffold Installation and Removal in U4 during U4 Refueling Cycle 25 RFO
ALARA Review No. 2009-057, Valve maintenance in U4 during the U4R25RFO
In-Progress ALARA Review 2009-050, BMI Tasks, 11/01/09
In-Progress ALARA Review 2009-068, S/G Secondary Side Tasks, 11/10/09
ALARA Review Board Meeting Minutes, 10/14/09, 10/15/09
Daily Dose Expenditure Data, 10/28-30/2009 and 11/05-08/2009
U4 R25 RWP Task Estimated versus Actual Dose Expenditure Data, 11/18/09
Reactor Coolant System (RCS) Total Cobalt (Co)-58 and Total Co-60 Concentrations, 10/27-28/2009
Refueling Outage U4 Steam Generator (S/G) Bowl Dose Rates (mrem per hour) for S/G ‘A’, S/G ‘B’, and S/G ‘C’: 10/2000, 10/2003, 11/2006, 11/2009
BMI Dose Tracking Log Data, 11/17/2009

CAP Documents
CR 2007-28018, Improvement opportunity – schedule pre-job briefing for each major evolution
CR 2008-4791, U3 ‘A’ RHR PP room light needs to be replaced prior to removal of scaffold
CR 2008-13328, Rework required to insulate ‘C’ reactor coolant pump
CR 2008-13458, Unnecessary tests specified for U4 RTDs resulting in poor ALARA practice

Section 2PS2: Transportation and Radioactive Waste Processing

Procedures, Guidance Documents and Manuals
0-HPS-040.5, 10CFR61 Compliance and Radioactive Waste/Material Shipment Classification and Characterization, Rev. 12/26/07
0-HPS-040.7, Marking, Labeling, and Placarding for Radioactive Waste/Material Shipments, Rev. 9/22/04
0-HPS-040.8, Radioactive Waste/Material Surveys for Shipments, Rev. 9/22/04
0-HPS-044.9, Radioactive Material/Waste Shipment Documentation, Rev. 10/1/09
0-NCOP-502, DTS Media Dewatering, Rev. 7/22/09
0-HPA-045, Process Control Program, Rev. 11/20/02C
PI-AA-204, Condition Identification and Screening Process, Rev. 4
CoC 9168, Model CNS 8-120B Shipping Package, Rev. 16

Shipping Records and Radwaste Data Reviewed
Shipment W-09-038, Primary Resin, Type B
Shipment M-08-014, DAW, Low Specific Activity
Shipment W-08-010, Primary Resin, Type B
Shipment 2007-070, Primary Resin, Type B
Shipment W-09-036, Filters, Low Specific Activity
10 CFR Part 61 Analyses, Filter Liner L507584-7, Filter Liner L505814-11, Resin Liner PO001711-13, Resin Liner PO002201-1, 2009 DAW

CAP Documents
QA Audit PTN-09-02, Radiation Protection Functional Area Audit

CR 2008-26392, Shipping software not classified as Safety Related SQA Level A
CR 2009-3212, South Carolina DHEC form 802 not properly completed for a shipment
CR 2008-23150, 4 shipments noted with missing documentation
CR 2009-10456, DOT limits exceeded on incoming shipment
CR 2008-1179, Valve failed during transfer of resin to high integrity container
CR 2009-9844, DAW waste stream may need updating

Section 4OA1: Performance Indicator Verification

Procedures, Guidance Documents, and Manuals
0-ADM-032, "NRC Performance Indicators Turkey Point", rev. 0

Records and Data Reviewed
Liquid Dose Summary Sheet, January – October 2009
Gas Gamma Beta Dose Summary Sheet, January – October 2009
Gaseous effluent release permit 09-33
Liquid effluent release permit 90137

CAP Documents
CR 2009-14554, Need to account for potential effluent release from resin spill
CR 2009-14742, Digital Alarming Dosimeter (DAD) rate alarm
2009-11358, Dosimeter dose rate alarm
2009-8982, I&C Worker received dose rate alarm while working in the RP cal lab
2009-8774, DAD Alarm
2009-1114, Dose rate alarm,

Section 4OA5: Other Activities

Temporary Instruction 2515/173 – Review of the Implementation of the Industry Ground Water Protection Voluntary Initiative

Procedures, Guidance Documents, and Manuals
FPL Nuclear Policy Environmental Procedure (EV)-AA-01, Groundwater Protection Program, Revision (Rev. 0)
EV-AA-100, FPL Nuclear Fleet Groundwater Protection Program, Rev. 0
EV-AA-100-1000, Groundwater Protection Program Communications / Notifications
0-ADM-115, Notification of Plant Events, Rev. 7/1/09Chemistry Administrative Procedure (CPP)
0-CPP-01.10, Ground Water Protection Program, Rev. 0
0-CPP-01.20, Strategic Plan: Ground Water Protection Program, Rev. 0
0-NCAP-103, Secondary System and Groundwater Radiochemistry, Rev. 8/6/09
0-NCSP-004, Schedule for Periodic Tests, Rev. 08/06/09
Offsite Dose Calculation Manual, Appendix 5B, Turkey Point Groundwater Sampling Program to Support the Industry Initiative on Ground Water, 6/4/07
Site Conceptual Model, Turkey Point Facility, (Draft) 10/2009

Records and Data Reviewed

Engineering Assessment of Systems Structures, and Components for Elevated Leak Risk to Ground

RP Records Quality Assurance 3000 File, 2008 Year End 10 CFR 50.75(g) Decommissioning Survey, 1/27/09

CAP Documents

Florida Power and Light Quick Hit Self-Assessment Checklist, NEI Groundwater Protection Initiative (NEI 07-07) Compliance, 08/6-8/2008

CR 2009-26867, Transfer canal leakage and NEI 07-07 impact

CR 2009-26792, Open cleanout flanges on pipes to neutralization basin

CR 2009-18013, High pH and temperature in well. Tritium also elevated but within expected range

CR 2009-07589, Unable to sample new groundwater monitoring well

CR 2008-30981, Drill additional monitoring wells onsite for ground water initiative

LIST OF ACRONYMS

ALARA	As Low As Reasonably Achievable
BMI	bottom mounted instrument
BTP	Branch Technical Position
CAP	Corrective Action Program
CFR	Code of Federal Regulations
CoC	Certificate of Compliance
CR	condition report
CVCS	Chemical and Volume Control System
CY	calendar year
DAW	dry active waste
DOT	Department of Transportation
GPI	Groundwater Protection Initiative
HPT	Health Physics Technician
HRA	High Radiation Area
IP	Inspection Procedure
LHRA	Locked High Radiation Area
mrem/hr	millirem per hour
NCV	non-cited violation
NEI	Nuclear Energy Institute
OS	Occupation Radiation Safety
PCP	Process Control Program
PI	Performance Indicator
PS	Public Radiation Safety
RAB	reactor auxiliary building
radwaste	radioactive waste
radworker	radiation worker
RCA	radiologically controlled area
RCS	reactor coolant system
RG	Regulatory Guide

RWP	Radiation Work Permit
RG	Regulatory Guide
Rev.	revision
SFP	spent fuel pool
S/G	steam generator
TS	Technical Specification
U3	Unit 3
U4	Unit 4
U4R25	Unit 4 Refueling Outage Cycle 25
URI	Unresolved Item
VHRA	very high radiation area